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NOVEMBER
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EDITORIAL

It cannot be denied that the possession of a completely Amateur Radio journal is of prime importance to the Australian Amateur, and in this regard the Wireless Institute of Australia has done well to maintain a magazine of its own, which has worthily served its members for many years.

Nevertheless, if the magazine is to be a financial success, it will be recognised that its production can only be maintained with the support of Advertisers.

That "Amateur Radio" has a real advertising value, has been proved beyond doubt by the loyal support received from Business Houses who have consistently advertised in it for many years.

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Central 4311

A Wide-Range Signal Generator

BY A. K. HEAD,* VK3AKZ

This Signal Generator was built to provide a wide-range of radio and audio frequencies at the minimum of cost and labour. It is nothing wonderful from the point of view of accuracy of calibration, minimum leakage signal, or constancy of output, but is good enough for lining up receivers and general testing purposes.

AUDIO OSCILLATOR

The audio circuit is a straight copy of one described in "Wireless World." Its good points are: (i) No coils to be wound, the frequency being varied by a carbon potentiometer which covers a large range of frequencies (about 20 to 1).

(ii) Range switching is by simply switching three condensers. Two ranges were used, from 40 cycles to 800, and from 800 to 16,000 cycles.

(iii) Very constant output at all frequencies. The output was checked with an oscilloscope and was constant up to about 10,000 cycles, above which the amplifiers of oscilloscopes were not flat.

(iv) Only one valve used. Admittedly it is a double triode, but since space was limited in the cabinet, this was a real point.

In the original circuit, a 6SN7 was used. A 6F8 (which is electrically identical with a 6SN7) was on hand here, so it was used. It has the small advantage of having one of the grids brought to a top cap. This was used as an input grid to minimise hum pick-up. If a 6SN7 is used, the grid which is furthest away from the heater pins should be used as the input grid.

The 2,500 ohm variable in the plate of the second triode controls the overall gain. For the best wave form, this should be adjusted to the smallest resistance which still gives oscillation over the whole frequency range. When this is done, the wave form appears a very good sine wave.

Due to the large time constants of the grid leak bias circuits, oscillations take about 16 seconds to build up when first switched on. A point to be noted is that the 0.5 μ F. condenser earthing the grid of the second triode should have low leakage, otherwise the cathode resistor voltage drop will be applied to the grids as unwanted extra bias.

A good quality potentiometer should be used for the 1 megohm frequency control resistance. One with a logarithmic tap was used and a reasonable frequency scale is obtained if it is wired so that clockwise rotation increases the resistance in the grid (i.e. decreases the frequency).

The three position range change switch has the middle position blank for psychological reasons. It enables the two ranges to be swept in the same direction, the blank position enabling the frequency potentiometer to be re-

turned to the other end of the scale without audible sound. If this doesn't seem a useful point, then a two position switch would do the job.

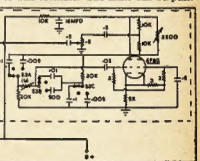
The output is about half a volt, and is taken via the half megohm volume control used to grid modulate the r.f. oscillator.

R.F. OSCILLATOR Like the audio oscillator, this uses a twin triode as a cathode coupled oscillator. The tube used is a 6J6, but the circuit would be suitable for other twin triodes. The 6J6 was used with the idea of extending the ranges to as high a frequency as possible, and also because of its small size.

Points about the circuit are: (i) The tuned circuit consists of the inductance L, band spread condenser C2, and tuning condenser C1 (in series with the 0.01 μ F. by-pass condenser). A nice point is that the coil L does not have a feed back winding or a tapping, and so for the low frequency ranges it is possible to use any inductance which may be

(iii) Modulation is applied to the grid of the second triode. The voltage output of the audio oscillator appears to be quite enough for decent modulation although the depth thereof has not been measured. The values of the components in this grid circuit are essentially a compromise, since the grid should be earthed for r.f. but not for the audio modulation.

(iv) The upper frequency limit of this circuit, although I have not actually measured it, is quite high as it will oscillate when L consists of the shortest piece of wire running to the band switch. A point to watch is the 500 ohm cathode resistor. It is the voltage across this which couples the two triodes together. It is by-passed by the stray capacities from cathode to earth (and since the filament is earthed, this capacity may be quite appreciable, say about 10 pF.). This by-passing becomes more serious the higher the frequency and may determine the limiting frequency at which it will oscillate. The limit can be pushed up by a small r.f. choke in series with the cathode resistor and which will resonate (broadly) with the cathode to earth capacity at this limiting frequency. A way to kill two birds with the one stone is to use a wire wound cathode resistor. When this was done the upper limit was due to the long leads and high minimum capacity of the plate circuit. The present frequency coverage is from 200 Kc. to 30 Mc. and it is intended to extend this both upwards and downwards.



on hand, such as r.f. chokes or i.f. transformer windings. Since only one end of L is "hot," only one bank of the wave change switch S1 is needed for changing coils.

For the tuning condenser C1, a miniature broadcast condenser is used. This gives 3 to 1 frequency coverage. The second section of S1 can be used to switch in a parallel condenser C2, which reduces the frequency range. This is used in two cases. By switching a 500 pF. condenser across the coil which covers the broadcast band, another range is obtained from about 400 Kc. to 500 Kc. This makes nice bandspread for lining up i.f.s and saves a coil. Again by switching in a small capacity, the coverage can be reduced to 2 to 1 which is used to cover from one Amateur Band to the next. No details need be given as to the actual coils and band-spread condensers used, since everyone has their own views as to what frequencies should be covered and how much band-spread is needed.

(ii) The output is taken from the 10,000 ohm potentiometer. The 25,000 ohm resistor in series with it cuts down the output, but it minimises variation of the oscillator frequency with movement of the potentiometer. The pot. is quite a good attenuator below 7 Mc., but performs rather indifferently above.

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If possible a band switch with shorting plates to short out unused coils should be used. Since this was not available a third bank on the band switch is used to short out any unused coil which happens to resonate with its stray capacities (usually at a frequency in the next highest band). Such resonances of unused coils become apparent on calibrating the oscillator, appearing as distortions of the regularity of calibrations.

POWER SUPPLY A small conventional power supply is in the cabinet (but not shown on the circuit diagram). The four position three bank function switch gives audio, modulated r.f., unmodulated r.f., and off.

The audio oscillator is left running all the time, B+ being applied to the r.f. oscillator when necessary.

* Assistant Technical Editor, 12 Peverill Street, Balwyn, E.8, Victoria.

A Crystal Controlled Converter for Six Metres

BY DR. LEO H. McMAHON,* VK2AC

To most, six metres is a band of frequencies allotted right down there somewhere, populated by a few diehards who sit around most of the year waiting for conditions to break when they work the thrilling DX of other Eastern States, the super DX of ZL and last year for the first time that out-of-this-world-DX, VK6. However, like old pipes, Harris tubes and spinach, six metres has an attraction all of its own. The other night a remark was heard on the band that over the week-end between Sydney, the Mountains and the no-coal fields area, there were 34 stations on. QRM was certainly getting bad. Thirty-four stations in four megacycles—117.6 Kc. and a bit each. However, I will admit that all of the 34 stations were in about the first megacycle and a half.

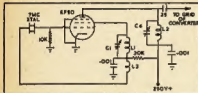
Six metres is funny in that respect. Of all the bands we have, it is peculiar in having but one end and no middle. Getting on six is not as hard as is thought. Transmitter construction is standard, beams are the order of the day and are easily constructed, and the receiver problem is easily beaten. Double conversion is a necessity for suf-

Readers will remember the first Article by Dr. Leo H. McMahon in the June, 1949, issue of "A.R."

Here are further details on this interesting method of reaching the high frequencies by a crystal controlled converter.

Selectivity necessitates the use of an i.f. about 455 Kc. or less. More than that is no go these days. Ease of use is an important factor. It is no use if you have to hold your breath while you tune somebody in and then are unable to change your position for fear of losing him.

Stability is a must. Have you tried to make a self excited oscillator about 40 Mc. that is stable and free from a.c. modulation? Have you tried to make one for the ten metre band? It can be done and has been done, but not by the average Amateur. The solution is in a crystal controlled high frequency oscillator, and the use of your ordinary station receiver as a tunable i.f. However getting crystal controlled output at 40 Mc. or above looks hard, but is not. Remember you are dealing with a receiver and need only enough voltage to get conversion—no power to drive a transmitter.



- L1 C1—Tune to 21.3 Mc. Use a small compression type or a Phillips 3-30 pF. trimmer.
L2 C4—Tune to 43 Mc.
L3—See text.

ficient selectivity plus some stability and sensitivity. Lots of "g's" aren't there? This being the case—the double conversion, not the "g's"—the solution lies in a converter ahead of the normal receiver.

The things to look for in a receiver are usable sensitivity, selectivity, ease of use and stability.

Sensitivity can be obtained in r.f., i.f., or audio stages. Usable sensitivity is a horse of a different colour. It really is the signal to noise ratio. This noise may be intrinsic or extraneous. The intrinsic noise sets the limit on the ratio in the laboratory and the extraneous noises set the limit in the shack.

Maybe you are one of the fortunate ones who live in a quite area, but most of us don't. It is found in practice that in the average location, outside noises put a limit to the sensitivity you can use. For this reason, the r.f. stages are quite standard r.f. stages and converters have been dealt with at length in all sorts of publications, so any discussion on them would only be a variation or a theme.

* 32 Harbourn Rd., Kingsford, Sydney.

to tune. The choice of crystal frequency and so tuning i.f. range is left to your own taste.

The combination L1 C1 tunes to the third harmonic of the crystal, in my case about 21½ Mc. Believe me there is no attempt to be super accurate or theoretical and this converter was made to go in purely Amateur fashion.

The secret of this oscillator is in L3. This has to be just large enough to make the crystal oscillate at its third harmonic but not so large as to make the circuit take off as an ultra-audio.

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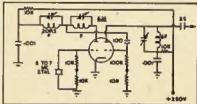
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The grid resistors are broken to enable a meter to be clipped on easily for testing.

Two different types of oscillators have been used to get the high frequencies for conversion. In both, only one tube is used. The first uses the circuit described in "A.R." for June, in which a seven megacycle crystal oscillates at 21½ Mc. A pentode tube is used in which the screen grid is used as the plate of the oscillator and a tuned circuit at 43 Mc. takes out the conversion frequency which is fed to the grid of the converter.

A minimum of parts is used. The value of resistors and by-pass condensers used have no special virtues except that I put them in and they worked.

L2 C4 tunes the output frequency which, in my case, is 43 Mc. (approx.). The reason this frequency is used is because seven megacycle crystals are on hand and it gives an i.f. range of 7 to 11 Mc. which is quite a good range

It is correct when you get oscillation over only a small range of C1. A meter to read the grid current is very helpful. A receiver tuned to the frequency helps differentiate between the crystal oscillations and parasitics.

The tube used is an EF50 but there is no reason why other pentodes cannot be used. An 1852, a 954 or even a 6K7 should work.

Two difficulties were encountered. One crystal was sluggish, but a wash with soap and water cured that. If you wash your crystal, do so over a towel as crystals break when dropped on hard surfaces. The other difficulty was that with one crystal holder it was impossible to set L3 reliably enough. It could be done but was a bit ticklish, and that's one thing we won't stand for. This holder was a pre-war type and although it contained an average sized crystal, it had large plates. The capacity of these was too great—the substitution of a small crystal holder, the standard ones with the 1" spacing, got rid of this trouble.

Tuning up is done with a grid current meter, but can be done by listening to the noise or a signal. Both circuits are tuned for maximum noise and signal. Maximum grid current, in my case 150 micro-amps, occurs at this same point. You might say that if there was more injection voltage, there would have been greater sensitivity. The writer might too, but not usable sensitivity, because if the receiver is opened flat out the noise is more than you can stand.

With this oscillator it is possible to turn everything flat out. Previously this was impossible as before maximum was reached something would break into oscillation.

The r.f. and mixer stages are peaked with ordinary condensers. The output coil is loaded with a resistor to give reasonably flat output across the six metre band.

The second circuit, used by VK2ABB, uses a double triode and the best is the 6J6. One half of it is a standard crystal oscillator with the tank circuit tuned to the fundamental frequency of the crystal. In series with this is a circuit tuned to the second or third harmonic of the crystal. This frequency is fed to the second half of the 6J6 which is a tripler or a doubler. The plate circuit of the second half is tuned to six times the crystal frequency.

A BC348 is used as an i.f. and a crystal fundamental of 88 megs. His conversion frequency is 40 Mc. and his i.f. from 10 to 14 Mc. This allows him to use the calibrations on his receiver to have a calibrated dial for six metres.

The receiver in use here is what the Americans call a "clunk." The writer had no need to be so fussy. Both converters work equally well and there is nothing to be gained in the final results in using one circuit in preference to the other.

Two snags rear their head. One is stay pick-up of signals of intermediate frequency. Shielding will rid you of this but don't use 7-7.2 Mc. as a tuning

range. The second is spurious signals caused by harmonics of the low frequency oscillator. The frequency of the spurious signals is given by the formula:

$$YX - 43,000 \text{ Kc.} = X - 455 \text{ Kc.}$$

where Y is the number of the harmonic and is usually 5 or 6;

X is the frequency of the low frequency oscillator;

43,000 Kc. is conversion frequency; 455 Kc. is i.f. of receiver.

The writer strongly advises anybody starting to build a receiver for six to proceed along these lines. He will thus circumvent many troubles he would run into otherwise and will finish up with a very satisfactory converter. He has the receiver problem beaten and all that is needed then is to buy a nice house on top of a nice big hill, totally unscreened and devoid of all extraneous noises! With these few little things, and also 40 megacycle output with a 7 Mc. crystal and one tube, what more do you want?

CIRCUIT DIAGRAMS OF 7A12B TRANSMITTERS

Circuit diagrams of the 7A12B R.F. Units can now be obtained by applying to the Secretary, Victorian Division, 191 Queen Street, Melbourne.

These diagrams would also be suitable for 7A12C and 7A12D Units, which are identical except for the ranges covered. The costs to cover prints, duplicating parts lists, and mailing are:—

R.F. Unit circuit diagram, 30" x 11" and parts list, 5/-.

Modulator Unit diagram, 30" x 11" and parts list, 5/-.

Please specify whether diagrams are required for R.F. Unit only, Modulator Unit, or both. Forward money order, postal note, or cheque with application, country cheques to include exchange.

A few photostat circuit diagrams and parts lists of the 522 are still available at 7/6 each.

A.O.C.P. CLASS

The Victorian Division A.O.C.P. Class will commence on Thursday, 12th January, 1950. Lectures are held on Monday and Thursday evenings from 8 to 10 p.m. Persons desirous of being enrolled should communicate with Secretary W.I.A., Victorian Division, 191 Queen St., Melbourne (Phone FJ 6997 from 9 a.m. to 6 p.m.), or the Class Manager on either of the above evenings.

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Major components such as Transformers, Cabinets, Chassis and Panel, etc., may be purchased separately if so desired. A descriptive leaflet showing full details, illustrations, circuit, parts list and prices is available on request.

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A V.F.O. Using Surplus CRV52233 Coil Unit

BY STEVE GRIMSLEY,* VK3ASG

Units No. 1 and 2 (3 to 9.05 Mc.) are particularly useful as a v.f.o.-exciter, as by tuning the oscillator section on 3.5 Mc., the second stage can be used as a tuned doubler, thus affording sufficient drive for an 807 or similar type of tube, and at the same time providing some extra isolation for the oscillator.

Unit No. 3 (2.3 to 4.2 Mc.) may be used, but an untuned Class A Isolator is recommended unless a better screened tube than the 6V6 is used in the second stage. By running straight through on 3.5 Mc. and tuning the 6V6, the writer has found that the 6V6 is likely to wander off on its own and a most annoying and confusing assortment of signals appears from one end of the band to the other.

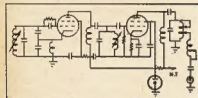


Fig. 1.—Basic Circuit arrangement of V.F.O.-Exciter from surplus CRV52233 Coil Unit.

However, the arrangement here described has proved most successful, has no bugs, and is reasonably stable; in fact, I haven't lost a QSO yet!

The basic circuit diagram of the complete v.f.o. is shown in Figure 1. It uses a 1625 (or 807) as an electron-coupled Colpitts oscillator. As you see, this oscillator is somewhat similar to the Gouret oscillator, now familiar to most active Amateurs as the Clapp oscillator. The 1625 was used for several reasons. Firstly, the manufacturers designed the unit for use with this tube. Secondly, it was desirable to preserve the calibration charts as far as possible. Thirdly, by using such a large tube with only 150 volts on the plate, it virtually eliminates heating effects. Lastly, I had several 1625s in the shack doing nothing.

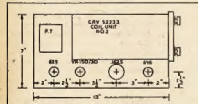


Fig. 2.—Layout of V.F.O.-Exciter, 3-9.05 Mc., from surplus CRV52233 Coil Unit.

* "Starlings," 46 Warrigal Road, Surrey Hills, E.10, Vic.

Many Amateurs have acquired surplus CRV52233 Transmitters and Coil Units. These Coil Units make quite a good v.f.o.-exciter which is not only simple to hook up, but is already calibrated for use.

I therefore suggest the use of this tube or, of course, an 807.

The layout is shown in Figure 2. A standard 13" x 7" chassis is used. This should be of the welded ends variety to obtain good mechanical stability. It is not suggested for a second that this layout is the best possible, but it was done this way in order to keep down the width, as space about the operating position is at a premium.

However, if you can spare 13" instead of 7", then by all means use your own layout. Remember, however, to so mount the coil unit that the side cover over the range slider contacts is readily removable.

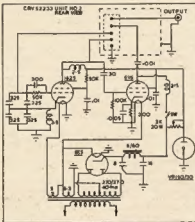


Fig. 3.—VK3ASG V.F.O.-Exciter, 3-9.05 Mc., from surplus CRV52233 Coil Unit.

The circuit of the finished product is shown in Figure 3. The oscillator constants are those of the original transmitter and recommended to me by Mr. C. A. Gunther, Asst. Chief Engineer of the Engineering Division of the American designers of the CRV52233. The 325 pF. condensers in the grid circuit are of the Ceramicon type and are in fairly good supply at trade houses. Most other components are common in the Amateur workshop.

Having decided on your layout, first remove the bottom cover from the coil unit, carefully putting aside the screws and washers removed in the process.

Then using the bottom cover as a template, mark the chassis with a scriber with the many holes in the cover. This cover can now be discarded, and the unit placed on the chassis and all screws replaced from underneath.

This most effectively fixes the coil unit to the chassis. The unit is mounted so that the lip on the front panel projects over the edge of the chassis.

The 1625 socket is mounted on pillars or spacers, far enough below chassis level to bring the top of the tube base to chassis level. This is the only shielding necessary for the 1625.

Having wired up the v.f.o., remove the side cover on the coil unit and fix both oscillator slide ranges on the appropriate range. On 1 and 2 units, this is Range 2. Tune oscillator on 3.5 Mc. and doubler control (upper right) on 7 Mc. Adjust the antenna coupling control for maximum output and use the antenna tuning control (upper left) for drive or output control. Open the switch across the 25 pF. condenser at upper right on rear of the unit.

Anyone requiring any information whatsoever about the CRV52233 transmitter or coil units can have it by sending a letter to the writer, who will be only too pleased to assist.

"WESTON" NEW A.C. CLAMP AMMETER AND VOLTMETER

A new a.c. clamp ammeter and voltmeter, with five current ranges up to 1,600 amperes, and three voltage ranges up to 760 volts, has been announced by the Weston Electrical Instrument Corporation, 617 Frelinghuysen Avenue, Newark 5, N.J., U.S.A.

Known as Model 633 Type VA-1, this instrument is designed to measure alternating currents and voltages without interrupting electrical service. Current measurements are made simply by placing the heavily insulated, trigger-operated clamping jaw around the conductor. Jaws will accommodate conductors, bare or insulated, up to two inches in diameter. Voltage measurements are made by connecting a set of clip-on voltage leads (six-foot leads are supplied) to the line, and to the screw-type terminals recessed in the side of the meter. Current and voltage measurements can be made almost simultaneously by rotating the thumb-selector switch to either the ampere or volt position. A pointer stop has been provided to show motor-starting currents.

To prevent shorts when measuring current on bare conductors, the jaws of the "Weston" clamp meter are insulated with tough rubber sleeves. Operation of the jaws is simplified by the single positive acting trigger, which can be operated by one hand when making current measurements.

The Model 633 Type VA-1 has a rated accuracy within three per cent of the full scale range (this applies to each of the eight ranges) when used on frequencies between 50 and 70 cycles.

High Frequency R.F. Chokes

On the higher frequency bands (10 metres and up) the Amateur is faced with a double problem. Should he use r.f. chokes in the grid or plate or filament circuit, and if so, what type of choke should be used. The question of "shall I use an r.f. choke here" is often answered by looking through circuit diagrams to see if others used a choke in that place in the circuit. On the other extreme, an Amateur may decide not to use any chokes because he has experienced trouble with r.f. chokes causing parasites.

This indecision on the part of the average Amateur is partially caused because he does not understand how an r.f. choke works. Or, if he understands r.f. chokes, he may find that the proper choke is not available commercially. The purpose of this article is to explain briefly how r.f. chokes operate and to give details on how to build good high frequency chokes.

OPERATION OF R.F. CHOKES

A radio frequency choke is normally used to provide a d.c. path from a point of zero r.f. voltage to a point where r.f. voltage exists. In Fig. 1A, the r.f. choke is in series with the high voltage lead and serves to prevent an r.f. current from flowing through the power supply. Condenser C1 presents a low impedance path for the r.f. current so that the current can return to the cathode circuit of the tube. Fig. 1B shows an r.f. choke in a parallel feed circuit. In this case the r.f. choke must be designed so that practically no r.f. current passes through it, because the r.f. current must pass through C2 to the tank circuit.

What magic property is built into r.f. chokes which enables them to pass d.c. currents and yet act as effective barriers to radio frequency currents? Obviously an r.f. choke must have inductance, capacitance, resistance or some combination of these three. The answer is found in the word "impedance," which is another way of saying "resistance to radio frequency current." The inductance, capacitance and resistance which are present in a choke combine in a certain way at certain frequencies and it is this combination that is called impedance.

It is not necessary for an r.f. choke to act like a high inductance in order to work properly. Probably the most common r.f. choke is the 2.5 millihenry type with four pies. This type is normally used as a series choke on the lower frequency Ham bands.

This type of choke has a relatively high impedance which is due to capacitive reactance. Because this and other types of r.f. chokes which cover a large frequency range are subject to resonant points at certain frequencies it is wise to use them only in circuits where they have been tried and found adequate.

In high frequency circuits, r.f. chokes are relatively important. Unfortunately the standard 2.5 millihenry choke will not serve in most cases, so that special high frequency chokes are desirable. Because the frequency is high,

the chokes become simpler to construct. In fact, single-layer windings are desirable.

In addition to their simplicity single-layer r.f. chokes have an electrical property which is very desirable. If a choke is designed to be self-resonant at a frequency which is close to the frequency or frequencies of desired operation, the choke will be very nearly a perfect choke in that it will be effectively a pure resistance of a very high value. For example, if a choke is desired for six metre work, it might be designed to be self-resonant at 45 megacycles. This means that at 45 Mc. the choke will appear to have no inductance and no capacitance. The impedances at 45 Mc. will be quite high and will appear to consist only of pure resistance.

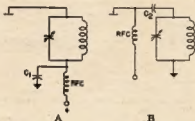


Fig. 1.—Illustrating Series and Shunt Feed R.F. Chokes.

At higher frequencies the choke will appear to have a very high resistance and some small amount of capacitance. This capacitance may be in the order of a micro-micro-farad. A small amount of capacitance in this order will not affect the operation of the choke.

A review of the above in capsule form shows us that—

1. Regular 2.5 mH. r.f. chokes, designed for operation over a wide frequency range, are generally not too efficient on the higher frequency bands (10 metres and up).

2. For optimum operation, r.f. chokes should be designed for one frequency, especially for the more critical service as parallel chokes, as shown in Fig. 1B.

3. Home-made chokes for low frequency work would be bulky and difficult to construct, but for high frequency work single-layer r.f. chokes are easy to construct and have the advantage of being almost perfect chokes electrically.

CONSTRUCTIONAL DETAILS

High frequency r.f. chokes may be wound on practically any insulating material, such as wood, bakelite or polystyrene. The exact nature of the insulating material will determine, to some extent, the quality of the completed choke. Generally it is not necessary to go to these materials, as very satisfactory chokes can be wound on ordinary resistors.

WINDING DATA

Here is the complete winding data for four high frequency chokes—

10-11 Metre Choke—No. 30 enamel wire wound to cover 1½" on an old-style 2 watt resistor (5/16" diameter).

6 Metre Choke—44 turns of No. 30 enamel wire wound on new-style 2 watt resistor (5/16" diameter).

2 Metre Choke—17 turns of No. 22 enamel wire wound on new-style 2 watt resistor (5/16" diameter).

1.25 Metre Choke—16 turns of No. 22 enamel wire wound on new-style 1 watt resistor (7/32" diameter).

Use only insulated composition type resistors (not wire wound). Use resistors of a high value—one megohm or higher. File a small notch on each end to catch the wire and hold it. The wire can be soldered first to one pigtail, the choke wound, then the wire twisted around the other pigtail, the insulation removed, and then finally soldered.

Do not attempt to make any changes in specifications. Use the proper resistors and the right size enamelled wire. A thin layer of coil cement may be placed on the completed chokes if desired.

The 144 and 220 Mc. r.f. chokes specified above use heavy enough wire so that they may be employed in filament circuits if the current does not exceed one ampere. The 28 and 50 Mc. chokes are to be used only in circuits where the current is in the order of 0.1 amperes, although they might possibly stand twice this current in Amateur service. All of the chokes are suitable for use as shunt-feed chokes.

—G. E. "Ham News," Jan.-Feb., 1949.

IMPORTANT

In order that the January issue may be printed before the Christmas holidays, Advertisers and Contributors are requested to forward their copy so that it reaches Melbourne not later than 1st December—THANK YOU.

CHANGE OF ADDRESS

Readers' attention is directed to the change of address of Trimax Transformers from North Melbourne to their new factory and offices at Charles St., North Coburg. All mail should now be addressed to Box 2, Coburg Post Office. The new telephone number is FL 1203.

BUY YOUR DX FRIEND A
YEARLY SUBSCRIPTION

TO

"AMATEUR RADIO"

SPORADIC E OBSERVATIONS

BY M. E. COLLETT,* VK2RU

Following on his article, "What, No Beacons," by VK2RU, it was thought that more precise data on Sporadic E observations would be of general interest to the v.h.f. boys.

Fig. 1 illustrates Sporadic E plotted against days of the years commencing 1st October, 1948, to 30th September, 1949. The shaded squares indicate days when it appeared that the ionisation was sufficiently intense to support 50 Mc. communication, and the black squares the days when contacts were actually made by Sporadic E.



Fig. 1.

It will be seen that the general pattern observed in the southern hemisphere in regards intense summer activity, mid-winter peak and 27-day cycle, follow closely on similar observations in the northern hemisphere. The chart follows also very closely on similar ones which were made for previous two twelve month periods.

Some interesting points emerge from the observations. The optimum distance for single hop contacts appears to be in the vicinity of one thousand miles. Double hop contacts involve intense ionisation of widely separated portions of the upper atmosphere and are naturally less frequent. However, it seems that ionisation sufficiently intense to support 50 Mc. transmission is much more frequent than was previously supposed.

Fig. 2 illustrates the Sporadic E condition on a particular day and shows the m.u.f. for a distance of 1,000 miles between two selected points as the "cloud" passes between them.

It will be noted from Fig. 2 that communication was possible on 50 Mc. for approximately one hour between the observing positions, but for only half an hour on 60 Mc.

The Sporadic E condition appears to completely mask reflections from the

higher regions of the ionosphere with resultant fade-outs on the lower frequencies.

Incidentally it has been found the optimum angle of radiation for this type of transmission is between 5 and 9 degrees.

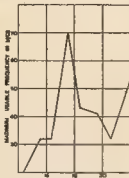


Fig. 2.

N.P.L. Eng., 14th July, 1947.

Naturally Fig. 1 provides only a very broad picture of the phenomenon, in as much as it does not show the area, the movement or to some extent the degree of the ionisation, but it does give a good idea of what may be expected in an average year in the way of 50 Mc. DX contacts.

SUB-ANTARCTIC RADIO STATION

The Australian National Antarctic Research Expedition has established radio stations on Heard and Macquarie Islands in sub-Antarctica. These stations are part of "A Class" weather and scientific posts set up as items in a long-range plan to explore and study Australia's vast Antarctic Territory. The pioneer Heard Island party, under meteorologist Aubrey Gotley, of Bexley, N.S.W., was relieved in February after 14 months' service. The Macquarie Island party will be relieved at the end of March.

Senior radio operator at Heard Island was Mr. L. Macey, of Sydney, assisted by Mr. Alan Campbell-Drury, of Melbourne, and Mr. Arthur Scholes, of Sydney. These operators maintained daily contact with Sydney (four schedules each day) and with the South African weather station at Marion Island, 1,500 miles north-west of Heard Island.

Heard Island is 3,500 miles south-west of Melbourne and about 800 miles from the Antarctic Circle. The A.N.A.R.E. weather station there will be maintained for several years. Relief radiomen now on duty at the Island are Ronald George Ferguson Oat, of Clifton Hill, Mel-

bourne; John Paddock of Colonel Light Gardens, Adelaide; and Hedley C. J. Burnett, of Ascot, Brisbane.

Mr. Oat, who is senior radio officer, was a technician with Radio Australia, Melbourne (the short wave division of the Department of Information) when he joined the expedition. During the war he served as a wireless air-gunner with No. 466 Bomber Squadron in the United Kingdom. He is one of two licensed Ham radio operators with the expedition. His call sign is VK1VU. He is 24.

The other licensed Ham is Arthur R. Burton, a 50-year-old engineer from Brisbane, Queensland. His call sign is VK1FE, well-known to many Hams under the call sign of VK4FE. He intends to keep in touch with them from Heard Island. The only grandfather with the party, "Pop" Burton is a veteran of two world wars. In the 1939-45 war he served with the 8th Division, Australian Imperial Forces, in the Middle East and took part in evacuations from Greece and Crete. Before joining the Australian Antarctic Expedition he was a diesel radio technician with the Postmaster General's Department.

On his return to Australia, Mr. Macey, leader of the pioneer radio party, said it was harder to maintain radio contact with Australia than with South Africa because of ionospheric conditions.

Mr. Macey and Mr. Campbell-Drury erected four 70 ft. aerial masts, each with 10 guy wires. They found it impossible to blast holes in the volcanic rock so the guys were anchored to all drums filled with heavy stones.

"During the year it was frequently necessary to climb to the top of the masts to replace halyards and unfurl aerials coated with clear ice," said Mr. Macey. "This was an unpleasant job in winter, with blizzards raging. The aerial wires would snap after being covered with an inch thick layer of ice. This problem has now been corrected by using heavier wires.

"We were unsuccessful in our efforts to hear Macquarie Island, although they could hear us. Heard Island is an excellent location for Ham radio transmissions and we received messages from all parts of the world, including the Arctic Circle. Radio transmission was not affected by the volcano Big Ben and the island's range of mountains. When atmospheric conditions were good, reception was particularly clear."

— . . . —

THIRD ALL-EUROPEAN DX COMPETITION

This year the Czechoslovak Amateur Radio Society—C.A.V. is sponsoring the third All European DX Competition, which is being conducted over two week-ends, each 48 hours long; one for c.w. work and one for phone.

The c.w. section starts at 0001 G.M.T. Saturday, 26th November, 1949, and ends at 2400 G.M.T. Sunday, 27th November, 1949.

The phone section starts at 0001 G.M.T. Saturday, 27th November, 1949, and ends at 2400 G.M.T. Sunday, 28th November, 1949.

* 85 Mann Street, Gosford, N.S.W.

A new name

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Our name is **UNITED CAPACITORS CO. PTY. LIMITED.**
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It means that you will be served by a Company which will complement Tecnico's high standard of manufacturing and service with direct access, additionally, to the vast experience of its British parent organisations.

We will offer you, too, a multitudinous range of capacitors manufactured by the British Companies, although numerous types have been earmarked for eventual local production.

Highlights in the British range are: Industrial Power Factor Correction, Metalmite and Metalpack super tropical Capacitors; Miniature Metalmites; Hi-K Ceramics having a K value of 3,000—an outstanding development; Micadisc and Silver Mica types; and Transmitting Capacitors, including the T.C.C. "Hi-Load" Power Ceramics. A complete range of types for Television applications is available. Ultimately, all locally made Capacitors will be branded "U.C.C." but for a time, the "Tecnico" brand will appear on some items; among other reasons is the fact that stock already manufactured by Tecnico Limited is being taken over.

To the existing clients of Tecnico Limited, as well as to all potential purchasers of our capacitors, we pledge ourselves to render the best possible service. We believe that, with our combination of local and imported types, we can extend unique assistance to all, and we shall be grateful for the opportunity of so doing.

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Tasmania Wins 1949 Remembrance Day Contest

It will be readily seen from the following results just how popular this Contest has become—and rightly so. The standard of operating was particularly high and signals were, with few exceptions, exceptionally good. The popularity and intensity of friendly Interstate rivalry may be gauged from the large number of logs received. Out of a total of some 450 participants, no less than 225 logs were received (and checked!)—surely a record percentage.

It is unfortunate that 50 of these logs were not eligible (for various reasons) for assisting their States' scores. The job of the Contest Committee was not made any easier by the untidiness of some entries, but generally speaking log entries were particularly clear and neat. Please remember those who have to check your logs when entering future Contests.

Some interesting statistics are being put aside for future reference. With due regard to the high percentage of log entries from the small States, the new multiplier would appear to make it impossible for the larger States to win the coveted trophy. An interesting point evolved from the figures showed that of the 12,471 QSOs, 6,800 took place on telephony and 5,671 on c.w.

And now down to the business of scores—our heartiest congratulations go to TASMANIA who clearly won from Western Australia. The table at the foot of the page sets out the facts.

INDIVIDUAL SCORES

Individual scores in the following order: Call. The figures represent in the following order: Call, type of Emission (O—Phone and C.W., R—Phone only, and C—C.W. only), Bands Used, Contacts, and Points scored. Logs not eligible are listed at the end of each State list and show the claimed points of the station concerned.

NEW SOUTH WALES

VK1PA	O	4	107	475	VK2RN	O	2	41	86
VK1FC	O	2	140	378	VK2JX	P	2	95	85
VK1SH	O	3	155	832	VK2JAT	O	2	39	81
VK1RA	O	4	123	811	VK2OF	O	1	44	70
VK1CO	O	4	120	810	VK2ANP	P	1	84	76
VK1DO	C	8	105	808	VK2IV	P	1	80	74
VK2OW	C	3	118	898	VK2AMP	P	1	19	83
VK1Y	O	1	183	894	VK2PI	C	1	32	59
VK1YL	O	4	104	287	VK2EP	P	1	18	65
VK1AH	O	4	121	274	VK2VH	P	1	18	66
VK2OB	O	4	111	265	VK2PT	P	1	14	58
VK2PC	O	2	100	847	VK2PO	P	1	16	56
VK2EZ	O	2	89	819	VK2AH	O	1	15	36
VK2ND	P	2	88	194	VK2VY	C	3	11	33
VK2AN	O	2	65	187	VK2RP	O	1	37	76
VK2BN	O	8	93	188	VK2HC	O	3	18	28
VK2TB	P	2	88	182	VK2AC	O	2	8	28
VK2ANM	O	2	41	117	VK2BE	O	1	18	27
VK2OW	P	1	44	100	VK2GO	O	1	0	30
VK2OA	D	1	40	100	VK2BU	P	2	0	30
VK2ANW	O	1	88	96	VK2BE	C	1	7	14
VK2ANP	P	2	85	91	VK2JW	O	1	7	11

INELIGIBLE LOGS

VK1NY	O	2	132	3047	VK2ADVO	O	1	27	867
VK2DI	O	1	84	3049	VK2ADA	P	1	17	28*
VK2YO	O	3	76	2090	VK2TA	P	1	6	29*
VK2XP	P	1	55	160*	VK2EM	P	1	6	24*
VK2AS	P	1	58	136*	VK2AQ	P	1	7	24*
VK2MT	O	3	68	114*	VK2AL	C	1	5	24*
VK2IQ	O	2	88	100*	VK2ZE	C	1	8	13*
VK2WD	P	1	86	78*					

	VK2	VK3	VK4	VK5	VK6	VK7	VK9	Total
Total Participants	144	116	51	58	44	32	3	438
Logs received	59	42	23	31	39	29	2	225
Logs not eligible	15	11	5	5	8	6	2	52
Eligible Logs	44	31	18	26	31	23	0	173
Licensed Amateurs	954	868	296	298	179	98	30	2721
Multiplier	0.046	0.036	0.061	0.067	0.174	0.24	—	—
Average of first six Logs	350.3	307.7	268.0	306.8	285.7	311.3	—	—
Final State Score	16.16	10.98	16.3	26.77	49.47	74.59	—	—
Place	5	6	4	2	2	1	—	—

VICTORIA

VK3AAW	O	2	170	370	VK3AW	P	2	45	119
VK3YS	O	5	118	348	VK3DO	C	3	46	99
VK3AR	O	4	146	323	VK3ADP	P	2	31	85
VK3AW	P	2	119	322	VK3TB	C	2	32	93
VK3ML	C	3	103	343	VK3UI	P	4	28	73
VK3SC	C	3	103	329	VK3KAL	P	1	26	71
VK3BT	O	2	75	317	VK3H	P	3	34	70
VK3BD	O	3	94	311	VK3RH	P	1	3	63
VK3BE	O	4	84	308	VK3PH	C	3	29	60
VK3PF	O	3	107	193	VK3AS	C	2	28	55
VK3GO	O	2	81	181	VK3J	C	1	16	37
VK3VQ	P	3	60	172	VK3OZ	C	2	30	86
VK3DS	P	2	51	106	VK3ED	C	1	11	27
VK3AR	P	2	44	141	VK3T	C	1	6	11
VK3ANL	P	2	93	176	VK3AGD	P	1	6	8
VK3ADG	C	2	87	119					

INELIGIBLE LOGS

VK3AML	P	2	111	206*	VK3VP	C	2	45	101*
VK3VU	O	1	100	206*	VK3NK	C	3	31	68*
VK3KE	O	2	69	231*	VK3TX	C	2	21	46*
VK3RR	O	2	85	106*	VK3KE	P	1	2	9*
VK3TM	P	1	78	181*	VK3ACH	P	1	2	8*
VK3ZA	O	1	57	181*					

QUEENSLAND

VK4FN	P	4	126	258	VK4X	O	2	106	194
VK4CO	O	1	117	402	VK4PH	P	1	76	183
VK4W	O	1	131	199	VK4H	O	3	74	132
VK4ZB	O	3	126	186	VK4W	P	1	39	131
VK4RT	O	2	101	210	VK4N	O	39	122	—
VK4RT	P	2	80	209	VK4B	P	2	50	167



The Remembrance Day Trophy

VICTORIA

VK4WD	P	4	37	87	VK4PB	P	1	18	47
VK4AF	C	3	26	80	VK4JF	C	3	22	38
VK4EZ	P	2	20	27	VK4V	P	1	14	6

INELIGIBLE LOGS

VK4BQ	P	2	68	168*	VK4HR	P	1	16	66*
VK4DO	O	1	50	168*	VK4CU	P	2	17	43*
VK4FD	C	1	45	88*					

SOUTH AUSTRALIA

VK4OU	C	3	147	858	VK4AX	P	2	80	146
VK4PF	O	5	148	368	VK4EM	C	3	88	156
VK4RO	O	2	140	319	VK4RY	O	1	80	109
VK4CT	O	2	134	297	VK4UX	O	1	62	95
VK4V	O	3	104	258	VK4BY	O	1	40	85
VK4PH	O	2	157	849	VK4BY	O	1	24	66
VK4RE	O	2	108	841	VK4EL	P	3	45	85
VK4RR	O	2	91	831	VK4VW	P	3	30	44
VK4GN	P	2	98	217	VK4VW	P	1	16	31
VK4MD	C	3	98	101	VK4BE	P	1	13	29
VK4PH	C	3	73	184	VK4GL	O	1	18	23
VK4RN	P	2	81	164	VK4VW	P	1	14	31
VK4SD	O	3	98	169	VK4HR	O	1	8	18

INELIGIBLE LOGS

VK4CD	O	2	68	180*	VK4W	P	2	8	101*
VK4JT	O	2	80	84*	VK4RT	P	1	7	13*
VK4W	C	1	22	80*					

WESTERN AUSTRALIA

VK6RU	O	5	105	480	VK6FW	P	2	89	510
VK6A	O	2	133	800	VK6ZF	P	2	64	140
VK6ME	O	2	124	885	VK6BP	O	2	57	137
VK6DX	C	2	158	368	VK6V	O	2	34	104
VK6U	O	4	108	335	VK6WZ	O	1	27	70

VK6HM	P	2	80	48
VK6GL	O	1	10	55
VK6GL	O	1	10	55
VK6WH	O	1	12	84
VK6AR	P	1	14	21
VK6HR	P	1	14	21
VK6PJ	P	1	13	21
VK6AP	P	1	7	24
VK6W	P	1	7	24
VK6MO	P	1	6	21
VK6JA	P	1	7	20
VK6V	P	1	6	10
VK6JK	O	1	10	17
VK6SA	C	1	9	17
VK6VZ	O	1	9	15
VK6RL	P	1	6	15
VK6MK	P	1	6	15
VK6JE	C	1	8	13
VK6LM	P	1	8	13
VK6CN	P	1	8	10
VK6FR	P	1	8	8

INELIGIBLE LOGS

VK6FL	O	2	04	228*
VK6CP	C	2	88	202*
VK6CP	P	2	13	144*
VK6AR	P	1	31	83*
VK6AS	P	1	19	47*
VK6BO	P	1	18	28*
VK6DO	P	1	18	28*
VK6MO	P	2	6	12*

TASMANIA

VK1NB	O	4	103	436
VK1LE	O	8	176	898
VK1BN	O	4	151	319
VK1BL	O	2	89	173
VK1AL	O	5	85	228
VK1AJ	P	2	118	282
VK1BN	P	2	89	173
VK1OM	O	1	118	282
VK1BQ	P	2	78	172
VK1DM	O	2	68	141
VK1CK	P	2	89	173
VK1MY	P	2	88	168
VK1CV	P	2	44	78
VK1BN	P	1	21	44
VK1PM	P	1	25	84
VK1OR	P	1	25	25
VK1LJ	O	1	30	25
VK1RB	P	1	27	21
VK1TE	P	1	12	20
VK1TR	P	1	10	14
VK1PJ	P	1	10	14
VK1IL	O	2	27	8
VK1YH	P	1	21	6

INELIGIBLE LOGS

VK1JB	C	3	79	204*	VK1YL	O	1	7	17*
VK1PJ	P	2	68	133*	VK1DB	P	1	14	16*
VK1RM	O	1	13	45*	VK1CA	P	1	8	6*

NEW GUINEA, Etc.

VK8NE	O	2	13	478	VK8NE	C	2	19	284
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LISTENER'S LOG

NZBS 195	E. Tebbelock	—	—	—	—	—	—	—	—
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* No signed statement
 † Incorrect set out of Log.
 ‡ Wrong numbering system.

THE OLD MAN

Para. 33 of The Handbook for Operators of Amateur Wireless Stations states: "The use of Amateur Stations for the transmission or receipt of messages for third parties is expressly forbidden." If the publicity given over the air and in the press of a certain Amateur who used this grand hobby of ours to obtain some serum from U.S.A. did not brought him into a please explain from the Department, I will be very surprised.

Admitting that the object may have been a worthy one, and there is the possibility that permission was obtained from the Department, it still can be a trap for the younger man. Do not risk the possible cancellation of your licence by having anything to do with message handling of any kind and if you do, then for the love of mike don't brag about it over the air for the whole of Australia to know your misdeeds. If an emergency arises, get in touch with your local Radio Inspector. The Department treat each particular case on its merits and are always willing to give permission when such emergencies arise.

VK4AZ was heard on with some type of modulation, it could have been f.m., but it did have the most dreadful distortion and hum content I have heard

for some time, and how VK2ALL told you it was quite OK is beyond me. This was the most classic example of a dishonest report I have heard. VK3FN was heard with a beautiful parasitic 50 Kc. away from his true signal and that parasitic old man had one big click every time you pressed your key.

I am supposed to hand out bouquets and occasionally there pops up the ideal signal with perfect modulation, beautiful quality and pleasing speech. To you, VK7JB, goes the "Oscar" for the best telephony heard this month.

I have mentioned before of wide open mikes and some of the things heard. This month's best effort goes to the Ham with a small child who wanted Daddy to whistle Baa Baa Black Sheep. Daddy obliged with the mike open for all and sundry to listen to.

VK2HH was heard discussing his drinking exploits over the air. It may sound big to enlighten the public as to how much you got through and that you passed out in the last hour and half of the party, but I hardly think this type of chatter gives a very good impression. At least there are some of us who can hold our liquor.

I was very surprised to hear one of the old-timers with a great amount of

hum on his carrier. You were going to do something about this a long time ago VK3OZ.

Outstanding amongst the splatters this month was VK3KP. Your bandwidth was around the 20 Kc mark and that's a lot of band for one phone station to take up. Next in line were VK3WU, VK2OQ and VK3SD, the latter with a small child butting in every now and then with "What are you coming in here for Daddy?"

One interesting contact heard was between VK3PS and VK7RM. Intelligent interesting conversation that made good listening and was in marked contrast to some of the drivel put over these days.

If you must talk drivel then get down to the bands where the general public haven't got receivers to listen to you, and spare some of us being branded as similar types. Of course you can always use c.w., or can you?

It is noticeable that the majority of c.w. signals are in a class very much above the average phone. Is it because good phone is harder to get going or is it because the c.w. boys take a pride in their signals? Cheers until next month.

QUESTIONS AND ANSWERS

MORE ON RADIO RANGE FILTERS

The following is to hand from Frank Hanham, VK3BJ. He forwarded these notes because there has been conflicting reports of the input and output impedances of the Radio Filter Type FL5. VK4AG asked in August issue of "A.R." for information thereon and a subsequent reply by W5GSK was published in October.

VK3BJ differs from W5GSK as to the impedances for the following reasons—

(a) According to American Signal Corps data, the set-up with regard to these filters was: Two were used in each Fortress in conjunction with the BC348 receiver, one for the pilot and one for the co-pilot, each had a switch-box (BC345) so that either officer could select Range, Voice or both at will. The output of the BC348 at 4,000 ohms impedance was jacked into the two switch-boxes in parallel and either high or low (low with high-to-low impedance adaptor) impedance phones were plugged into the other jacks on the switch-boxes. To match the phones, the output impedance of the Filter would be approx. 8,000 ohms and the input likewise, to match the BC348 output, when the two Filters or a Filter and a pair of Phones are in parallel.

(b) Tests by the P.M.G. indicate it is a high impedance filter.

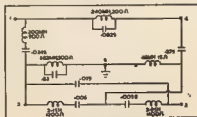
(c) Tests on several of these filters were made by myself and others with the Boonton b.f.o. and a GR multi-impedance output meter. On range position, the insertion loss at the resonant frequency of 1,020 cycles was 12 db with an output impedance of 8,000 ohms.

When the impedance was 600 ohms, the insertion loss increased to 37 db.

Keeping a constant input voltage to the filter, the following figures at an impedance of 8,000 ohms were obtained:

Bandwidth at—	
—2 db	80 cycles 990-1070.
—3 db	140 cycles 970-1110.
—17 db	325 cycles 900-1225.

Beyond this we could not go, but the P.M.G. found that at —40 db the bandwidth was 400 cycles.



- 1 and 5—Voice input.
- 3 and 5—Range input.
- 4 and 5—Voice output.
- 2 and 5—Range output.

This filter is sharper than the FL5, which has an insertion loss of 13 db. I have been using an FL5C for some time now and find it very effective in separating c.w. stations and reducing background noise, etc.

On phone the filter is helpful in cutting out some heterodynes and splatter

whilst not materially affecting the intelligibility of speech.

Some figures on the voice position may prove interesting, insertion loss 8,000 ohms impedance is 0.5 db.

300 c.p.s.	0 db	1190 c.p.s.	—3 db
740 "	—2 db	1225 "	—2 db
770 "	—5 db	1260 "	0 db
810 "	—11 db	2500 "	0 db
850 "	—17 db	10000 "	—0.5 db
1000 "	—26 db*	15000 "	—2 db
1110 "	—17 db	20000 "	—5.5 db
1140 "	—11 db	25000 "	—10 db

* P.M.G. figure.

We are indebted to the P.M.G. for the circuit.

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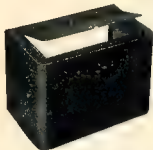
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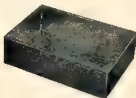
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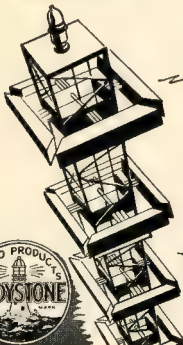


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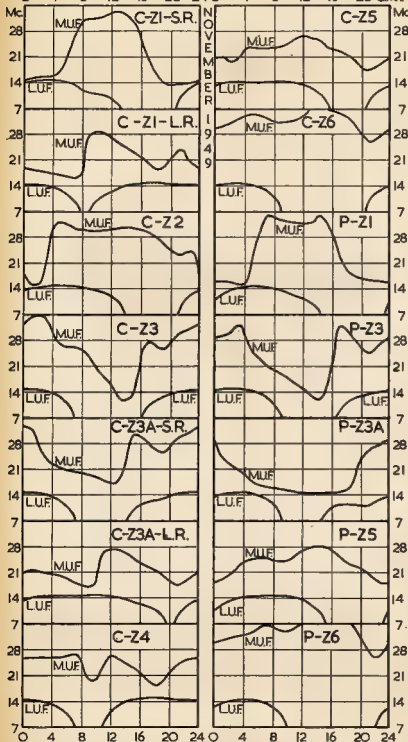
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IONOSPHERIC PREDICTIONS FOR THE AMATEUR BANDS

0 4 8 12 16 20 24 0 4 8 12 16 20 GMT



IONOSPHERIC PREDICTIONS FOR THE AMATEUR BANDS

NOVEMBER, 1949

The accompanying charts have been prepared by the Ionospheric Prediction Service of the Commonwealth Observatory. The first set of the series was published in the November, 1948, issue of this magazine, together with an article explaining the nature of the forecasts and how to use them. Nine of the charts, prefixed by the letter "C" for Canberra, refer to forecasts for the South-Eastern Australian States. The remainder, prefixed by the letter "P" for Perth, are for Western Australia.

The Canberra charts refer to the following world zones:—

Zone	Region	Terminal
1	Western Europe	London
2	Mediterranean	Cairo
3	N.-West America	San Francisco
3a	N.-East America	New York
4	Central America	Barbados
5	South Africa	Johannesburg
6	Far East	Manila

The forecasts have actually been prepared for point-to-point circuits between Canberra and the overseas terminals mentioned in the above table. It is, however, to be expected that the charts will provide an approximate indication of ionospheric conditions for all Amateur contacts from South Eastern Australia to the various world zones.

The Perth charts are similar to those based on Canberra. No forecasts are given from Perth to Zones Z2 and Z4 for the current month, as chart P-Z2 would be essentially similar to chart P-Z1, while chart P-Z4 might be unreliable due to auroral activity in high northern latitudes.

USE OF CHARTS

All that is necessary in using the charts is to select a time (G.M.T.) during which a specified Amateur band frequency (m.u.f.) of the F region of the ionosphere but above the lowest useful frequency (l.u.f.) for the desired contact. In two cases, Zones 1 and 3a it is necessary to consult both the short-route (S.R.) chart and the following long-route (L.R.) chart.

QUIZ

The Prediction Service welcomes comments on the accuracy of its predictions. In particular, answers to the following questions on the Canberra-Far East (Manila) circuit would be useful:—

1. Did the 7 Mc. band regularly become workable at about 0900 hours G.M.T. and unworkable at about 2000 hours G.M.T.?
2. Was the 14 Mc. band workable except for a few hours after Greenwich midnight?
3. Was the 28 Mc. band workable except for a few hours before Greenwich midnight?

Answers to the Quiz should be sent to the W.I.A. and should, if possible, refer to consistent results obtained on the majority of days in the month.

Six-Second Low Voltage Soldering Iron

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It is always ready for instantaneous use; no frequent cleaning and tinning of the bit is necessary; it transmits the heat faster to the work than any other soldering iron of twice its size.

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The length is 10", weight 3½ oz., bit ¼" screwed into ½" shank, heating up time is 6 seconds (on 4v.).

Any supply between 2.5 and 6v. a.c. or d.c. can be used. With the 4v. transformer, optionally supplied, the heating up time is 6 seconds and the current drain approximately 20 amp. In view of the short time necessary to bring the Scope Soldering Iron to the required temperature, the watt hour consumption is negligible. If the voltage exceeds 4v. on load, an extension cable at the ratio of 2 yards for each volt above 4 is recommended. Connected to a car battery, the red lead should be taken to the ungrounded battery terminal or intermediate tapping to avoid the danger of a short circuit between the copper bit and car chassis.

Manufacturers are Scope Laboratories, Melbourne. Price is 43/8 each, plus transformer if required. Australian Representatives are R. H. Cunningham & Co.

IMPORTANT

Would all Magazine Contributors please note that all contributions must be addressed to "Law Court Chambers," 191 Queen St., Melbourne, and NOT to the old box number.

Contributions, particularly notes, if addressed to the box number may not be received in sufficient time to be included in Magazine for the month for which they are intended.



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Compiled by J. K. RIDGWAY, VK3CB.

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FEDERAL

DX C.C. LISTING

Many applications have been received recently, but only applications with new additions to existing listings, that have not enclosed a list of the claimed stations or postage for return of the card to the sender. Please ensure that you are not sending a batch of cards, you comply with the above.

PHONE

VK8AD (1)	..	..	..	26	120
VK8AK (1)	..	..	..	26	120
VK8BU (2)	..	..	..	27	121
VK8BE (2)	..	..	..	27	121
VK8BU (2)	..	..	..	27	121
VK8BU (2)	..	..	..	27	121
VK8BU (2)	..	..	..	27	121
VK8BU (2)	..	..	..	27	121
VK8BU (2)	..	..	..	27	121
VK8BU (2)	..	..	..	27	121

C.W.

VK8BE (6)	..	..	..	40	151
VK8BU (1)	..	..	..	40	148
VK8VW (4)	..	..	..	29	134
VK8AU (9)	..	..	..	28	124
VK8AL (5)	..	..	..	40	123
VK8EK (5)	..	..	..	28	121
VK8KB (10)	..	..	..	29	120
VK8HR (3)	..	..	..	40	119
VK8RP (11)	..	..	..	25	114
VK8ED (1)	..	..	..	40	115
VK8AD (7)	..	..	..	28	114
VK8UM (12)	..	..	..	27	108

New C.W. Members

VK8FH (15)	..	..	..	27	108
VK8GW (16)	..	..	..	28	107

OPEN

VK8BE (4)	..	..	..	40	176
VK8DI (4)	..	..	..	40	150
VK8AU (5)	..	..	..	29	124
VK8JE (12)	..	..	..	39	123
VK8HQ (3)	..	..	..	40	146
VK8HR (7)	..	..	..	40	146
VK8RP (13)	..	..	..	24	144
VK8MC (5)	..	..	..	29	130
VK8RK (1)	29	126
VK8AD (7)	28	114
VK8OP (10)	29	120
VK8ABA (9)	40	123

New Open Member

VK8ADE (48)	280	
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Another application has been received from VK8FP for the Phone Award and still awaits checking.

WI BROADCASTS

All Amateurs are urged to keep these frequencies clear during, and for a period of 15 minutes after, the official broadcasts.

VK8WI—Sundays, 1100 hours EST, 7195 Kc. and 2000 hours EST, 60.4 Mc. No frequency checks available from VK8WI intra-State working frequency, 7175 Kc.

VK8WI—Sundays, 1100 hours EST, simultaneously on 2550 and 7195 Kc. and re-broadcast on 60 and 144 Mc. bands. Intra-State working frequency 7185 Kc. Individual frequency checks of Amateur Stations given when VK8WI is on the air.

VK8WI—Sundays, 0900 hours E.S.T. simultaneously on 2750 Kc, 7195 Kc, 14548 Kc, 53.4 Mc. and 144.125 Mc. Frequency checks are given two nights weekly, and the times are announced during Sunday broadcasts. 7065 Kc. channel is used from 1600 to 1935 hours each Sunday as VK4 query service to VK8WI.

VK8WI—Sundays, 1600 hours S.E.S.T. on 7195 Kc. Frequency checks are given by VK8WD on Friday evenings on the 7 and 14 Mc. bands.

VK8WI—Saturdays 1400 hours, Sundays 0930 hours W.A.S.T. on 7195 Kc. No frequency checks available.

VK8WI—Second and Fourth Sundays at 1000 hours S.E.S.T. on 7195 Kc. No frequency checks are available.

W.A.C. AND W.B.E. APPLICATIONS

All applications for W.A.C. and W.B.E. Certificates should be forwarded through your Divisional Council for membership checking and forwarding to the Federal QSL Manager. In the case of the W.B.E. Certificate, unless the applicant is a member of the R.S.G.B. a note or order to cover the cost of 2/6 sterling for the Certificate should be included with the application. Applications for other than the above mentioned Certificates should be forwarded direct to the Society concerned.

W.I.A. ACTIVITIES CALENDAR

Nov. 25-27: "CQ" DX Contact (c.w.).
Dec. 26-27: Third European Contact (c.w.).
Dec. 3-4: Third European Contact (phone).
Dec. 30-31: A.R.C.I. International DX Cont.
Dec. 31-19: A.R.C.I. International DX Cont.
Dec. 19: Motions for 29th Federal Convention due.
Jan. 25-29: Australian National Day Contact.
Jan. 31: Membership Roll of each Division due.

FREQUENCY ALLOCATIONS

The following is a list of the bands available for use by the Amateur Service in Australia, followed by the type of emission allowed on those bands.

3.5 to 3.8 Mc.—A1, 3, 2a, 6F2
7.0 to 7.3 Mc.—A1, 3, 2a, 6F2
14.0 to 14.4 Mc.—A1, 3, 2a, 6F2
35.95 to 37.25 Mc.—A1, 3, 2a, 6F2
28.0 to 30.0 Mc.—A1, 3, 2a, 6F2
49.0 to 49.0 Mc.—A1, 3, 2, FM
144 to 148 Mc.—A1, 2, 3, FM, Pulse
280 to 396 Mc.—A1, 2, 3, FM, Pulse
575 to 585 Mc.—A1, 3, 2, 3, FM, Pulse
1215 to 1300 Mc.—A1, 2, 3, FM, Pulse
2400 to 2450 Mc.—A1, 2, 3, FM, Pulse
5650 to 5850 Mc.—A1, 2, 3, FM, Pulse
10000 to 10500 Mc.—A1, 2, 3, FM, Pulse
10000 to 10500 Mc.—A1, 2, 3, FM, Pulse
30000 Mc. and higher—A1, 2, 3, FM, Pulse

Note.—6F2 emission represents a maximum deviation from the quiescent frequency of plus or minus 3 Kc.

QUEENSLAND

Secretary—W. L. Stevens, VK4TB, Box 6357, G.P.O., Brisbane.

Meeting Night—Last Friday in each month at the Y.M.C.A. Rooms, Edward Street, Brisbane.

Divisional Sub-Editor—F. H. Shannon, VK4SN, Minden, via Rosewood.

SOUTH AUSTRALIA

Secretary—E. A. Barber, VK8JD, Box 1244K, G.P.O., Adelaide.

Meeting Night—Second Tuesday of each month at 17 Wymouth St., Adelaide.

Divisional Sub-Editor—W. W. Parsons, VK8PB, 153 Adelaide, Henley Beach.

WESTERN AUSTRALIA

Secretary—W. E. Cozzon, VK4AG, 7 Howard St., Perth.

Meeting Place—Piedbury House, Cor. St. George's Ter. and King St., Perth.

Meeting Night—Which the Monthly Bulletin.

Divisional Sub-Editor—George W. Ashby, VK8GA, 33 Mars Street, Carlisle, Western Australia.

TASMANIA

Secretary—E. D. O'May, VK8OM, Box 511B, G.P.O., Hobart.

Meeting Night—First Wednesday of each month at the Photographic Society's Rooms, 103 Liverpool St., Hobart.

Divisional Sub-Editor—Capt. E. J. Cruick, VK8EJ, Anglers Bar, Hobart.

Northern Correspondent: C. P. Wright, VK8LE, 8 Knight St., Launceston.

FEDERAL CONVENTION

Federal Executive, on behalf of the Federal Council of the Wireless Institute of Australia, and having taken action in accordance with Part X of the Federal Constitution of the Wireless Institute of Australia (as amended) 1947, hereby gives notice that Part X of the said Constitution of the said Institute has been duly altered as follows:—

"Each representative of a Division on the Federal Council shall be elected by the members of the Division at the period of sixty days immediately prior to the commencement of the Annual Federal Convention by the voting members of the respective Division."

Such amendment became effective on the 1st October, 1949.

F.I.A.T.E. CHARTS

Your Divisional Council and Federal Executive would be interested to know what value you as a transmitting Amateur, obtain from these Prediction Charts that have been appearing regularly for the last 18 months or so in "A.R.C.I." We believe they can serve a very useful function—do you? If so please let your Divisional Council have your comments.

20th FEDERAL CONVENTION

Once again, the time comes around for those motions you want included on the agenda for discussion by Federal Council. The Activities Calendar published on this page shows the date by which all motions should be in the hands of your Council.

It was agreed by all at the last Convention that there were far too many items for General Business which could be obtained by your early notification of your particular item—this will save a lot of time at the Convention in discussion on items which have not been considered by each Divisional Council, but which would have been.

AMATEUR RADIO CLUB OF INDIA

The above Club, which represents the Amateur fraternity of India, has applied for I.A.R.U. membership, and in doing so solicited the assistance of the I.A.R.U. in the form of a letter of introduction. The Federal Executive, after due consideration of their proposal, had much pleasure in supporting their application for membership.

PRIZES FOR 1949 VK-2L DX CONTEST

The following are the prizes for the 1949 DX Contest—Open CW: Pair 8345, donated by Philips Electrical Industries; Open Phone: Order to value of £5 for transformer, etc., donated by E.S. Equipment Pty. Ltd.; 28 Mc. CW: Order to value of £5 for Cydon Transmuting Condensers, donated

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COALFIELDS AND LAKES

Only news from Lakes this month comes from Goodford, where 1RU is checking his gear in readiness for this summer and working cross-band 144 to Sydney and Newcastle. 2AEZ going on 80 and is now putting up a beam. 2AMU also active on 80 and has managed to add 2D4AZ and 2P4SN to his 28 Mc. list. At Toronto Jack Early is a reliable 30 contact. 8VU too is going on 50 with fine signal and new beam, also works 7 Mc. 2JZ not heard much, mainly on 80. 2TV on 38 and 144. 2ALM is a new Ham in Cranston, is not really set up yet, but made a few contacts on 28. 2PZ still not heard and 2EIK seems to have given game away for the moment anyway. 3YO seems to be making hay on 38 Mc. and getting ideas for a new rotary.

2KZ active again consistently on 50, 28 and 144. 2EP also on same bands using a transceiver on 144. A new 3 over 3 beam going up on the beam. 2ADT relaxing after the 80 Mc. contest, had a few days in bed with the flu. RT working all bands and reports conditions improving; heard VE6 on 40. 2YL going quietly on all bands and working a little DX on 14 Mc. and using a new two section 8JK on 14 Mc. with good results.

SOUTH COAST AND SOUTHERN

This month sees the combining of the South Coast and Tablelands and Southern Zones. Some months ago Noel Arnold, VK3OD, relinquished the position of ZC Southern, due to pressure of business. As there was a lack of activity in the zone, it was decided to combine the two zones and they will now be known as per the heading. Zone Officer for the new zone is Roy Harris, VK3OD, of Yass, of the old South Coast and Tablelands Zone.

2AJP been talking about frequency meters and YLJ. Jack runs 100 watts to H13 and has a new pile. 8VY QRL in garden, little time available is spent on 16. 3AIZ frantically seeking a house and will make up for inactivity when the problem is solved. 2JQ on c.w. with heavy signal, heard working 2L on 40 phone. 2ALS has small sports car and is talking portable transmitters, has BC450A; fishing season coming up we should hear him from some remote spot. 3L and 3QU Canberra heard briefly. 2PI has small rig in kitchen, a handieap after meals! 2AJP reports 2AMW is set up in his new location. 8ANW is in N.E. and now has a 2L call. 2VW has gone to VE6 and has taken call out there.

2VH and 2AOX QRL re-building. 2AOX working a little DX between jobs. 2MT, 10Y, 2LA active on c.w. and phone. 2VW doing the job on c.w.

and phone, a new time coming up in final. 2AJP active on 28 with p.p. 877A. Kevin is a new Ham only been on 6 weeks. Comments to 1PN on addition to the family—nice work. 2TC, 2TA, 2AKE no news, what about some 07s? 2BT, 2AMV, 2FN, 2TG and 2DO were entertained by 2TH during holiday week-end. 2YC reckoned QSL business slow, so rec'd of few new ones for Hugh. 2JV was at 2AMV's shack when 2DO called. 2BT has his gear set up in good place, plus all his o.c.s. His metre biting the Forbes gear. In Albany, 2ANQ should be active soon and 3QU has lot of gear about but not working it. 2EU QRL home building, also building gear. 8H heard from 2AB.

3OJ putting up 32 ft. mast for 16, uses 50 ft. side antenna on 80 and 40. 2ANQ has built a new shack in back yard and should be on soon. Is busy converting B-1. Ex while his AR7 falls to pieces; has trouble mastering the Baltic tones of his new Australian customers. 2AJ, 2QE still on air, but nothing else. 2BHM very active on 5 metres, works consistently with 4PN in Tamist. 2ANT has not been on for a long time. Quarters cramped (try a garage a la 2BU, with sink). 2TH left Wagga for Bourkeville. 2QE left for Moree, but later he is back in VE4. 2VW not heard post-war. 2AID heard well on forty day and night, now building a 6 metre converter. Many thanks to 2AJP, 2AJP, 2VW and 2AID for sending notes along.

VICTORIA

TECHNICAL EQUIPMENT CONTEST

Al Harris, VK3OD of Birchip, one of the real old timers, has won the prize for the best piece of Technical Equipment submitted at the recent Victorian State Convention.

A judging committee has been formed, and the rules will be published next month, so now is the time to start on that pet piece of equipment you have had in mind for so long.

BAITLEMANE CONVENTION

On Sunday, 10th September, Castlemaine became the mecca of a large proportion of Victoria's Ham yesh not only VE6, but they came from far off Oshay, G. land and VR8, to attend the Annual Convention of the Central Western Zone. Proceedings commenced at 1200 hours when a vigorous labelling campaign was carried out by the President and Secretary in the entrance of the Oshayenne Town Hall. Seventy-eight Hams and so forth signed the visitors' book, were fully tagged,

and passed on to the Mayoral Chambers where the boys were given a happy and informal welcome by Gordon and Mrs. Wernice in their dual capacity of Mayor and Mayoress and VK3UJ, 3QQ, at this stage, read out the weekly WLA broadcast in a brighter and breezier style than usual, next also was lunch, preceded by a lively rag chow in the foyer, when the boys really got together and consumed gigantic quantities of something or other. Some of the problem solvers, after the superb satisfaction thirty-four met down in a room normally seating 48. 3WQ distinguished himself as a waiter par ex. Strange to say, the soup Charlie handed round all, reached its QTH in good order.

During lunch, the prize for the lucky door ticket was drawn, and resulted in the 313 going to Charlie Johnson. After a little magic in the stage of the 813 changing to pepper and salt, and back again it was duly handed over (who was Mandrake?)

Next item was the v.h.f. demonstration by Ken McGaggin. 3XW, kindly assisted by VR8, EDC and company who provided the outside contacts. Ken had an imposing array of 50, 144 and 578 Mc. gear and went to no end of trouble to explain and demonstrate the salient points of each piece of gear. For simplicity, the 678 Mc. transmitter, as per January "A.R.", was outstanding. On the actual transmitting side perhaps the most striking feature was the sharp directive feature displayed by the simple dipole on 144 Mc. Ken's able demonstration was greatly appreciated by those present, and should do much to stir interest in the v.h.f. bands in this part of the State.

Next item was the eagerly awaited judging for the best piece of home-built equipment. The boys were each given a ticket and after 45 min. past the exhibits voted VE7 Mansfield VK3EM the winner for his complete v.h.f. transmitter/receiver can power supply and Ray Fitzsimmons VK3FT into second place with an f.b. phone monitor, etc., covering from h.c. band through to 88 Mc. Both these chaps certainly earned their blankets and let's hope they are now snugly tucked in round their coats. Time was marching on with flying feet, so the Annual Meeting was the next item, minutes were read and accounts passed for payment.

Officers elected for the coming year were: President, 3GN; Vice-President, 2XU; Secretary and Treasurer, 2VW; Committee, 3XG, 8H and 3AKW. During the Annual Meeting our good friend Byron RTA made another of his practical gestures to help in improving technical and operating ability in the zone by donating three prizes for the ensuing twenty months for:—

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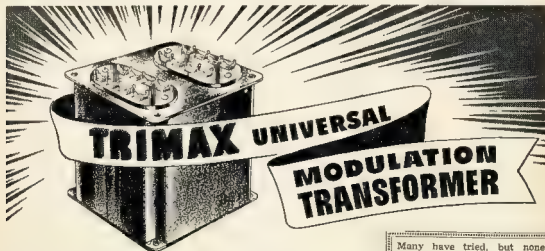
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CORRESPONDENCE

The opinions expressed in these letters are the individual opinions of the writer, and do not necessarily coincide with those of the publishers.

FOR AND AGAINST

Editor "A.R.L." Sir,
5 Pasadena St., Kogarah, N.S.W.

On the subject of open letters, also the "Old Man's" contributions, I wonder if my reactions will be the same as those of other DXers and members of the Amateur fraternity and readers of "Amateur Radio."

To me, the tone of our journal suffers badly by the inclusion of the sentiments of one of two of the type addressed to VK2JP and the victims of the "Old Man's" criticism.
It is interesting to see these writers that there are two sides to a story, always. For example, in the case of VK2JP and his DX activity, quite a few of the boys have worked a "new one" through his good offices especially as some of his DX friends often appear and remain on the band for a season as a result of his activities. In regard to the YL1A incident, as described by VK2BG (no remarks about third party traffic), this could happen to anyone. The fact that ZBG evidently heard JJP does not mean that the reverse was also the case. I doubt whether any other station writer have called if the DX "calling on asked" or something equivalent had been used, even assuming ZBG was heard by JJP.

It is agreed that a lot of the practices denounced by the "Old Man" may not be desirable. However, some bring their own rewards. Long Qs for example, may be called for, may be a nuisance, but a DX station and will be passed over. In another case mentioned by the "Old Man" that of VK2AGW working a lot of DX stations in the G land hook-up in the Sydney area, this practice is not frowned upon because of the keen desire for comparative reports and the limited time in which the band is open.

The wise words which tell of the good in the worst of us and conclude with the moral that it is better to be a fool than to be a wise man, might be borne in mind. In the extreme, I suggest "closed letters" if one feels that badly.

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the QTH may always be found in the call book. "Open letters," to my mind, are nearly as obnoxious as the "anonymous" variety.

—W. ROBERTSON, VKZUS.

"THE OLD MAN"

21 Sutherland St., Lane Cove, N.S.W.

Editor "A.R.L." Sir,
This bloke who calls himself the "Old Man" ought to be more careful about reading the regulations before he starts making his own laws. Said statements, when incorrect, misled many and in any case should not be published in "A.R." which, after all, is OUR magazine not just the OM's.

Thus, for the information of all and sundry, including said OM, I quote here certain portions of the P.M.G. Handbook as follows: "The OM may find space to publish in this order that certain impressions may be corrected."

The OM, who apparently dislikes most phone men and those who operate in networks in particular, makes the statement that, "The regulations state very definitely that the call sign of the station transmitting and the call sign of the station being worked must be announced on each over."

The regulations state nothing of the sort. What they do state, and I quote here from page 16 of the P.M.G. Handbook is as follows:

"134. The operator of an Amateur Station shall transmit the call sign of the station being worked and the call sign of the station to which he is operating at the beginning and end of each session, and at least once in every five minutes during the session."

The word "session" is defined on page 2 paragraph 2:

"In this Handbook, unless the contrary intention appears, the word 'session' means a period of operation between two or more Amateur stations, from the time of establishing communication to the time of signing off."

Thus you can work by "signing your carrier on and off without any mention of call sign," work push to talk to your heart's content, so long as you remember to announce your call signs at least once every five minutes.

Further, regarding this business of phonetics. The Department suggests that the standard phonetics be used for the sake of uniformity, but points out that their use is not compulsory so long as the phonetics used are not indecent or profane as set out in paragraph 128 of the P.M.G. Handbook. I am sure that the OM would like to give a lot to the call signs of stations when conditions are bad.

Finally, might I suggest to the OM that if his column is to be a useful one (and it should be) he should refrain from allowing his own particular hates to creep, hay, leap into prominence! Some of the things we read in the "Ratings" in his column are just childish. Take that "Watter" or "Idiotically," "Natter" which the OM thinks is "Hatter!" These things have no place in the columns of "A.R.L."

The two standards by which we must judge operating, or what is said over the air and in what manner, are: (1) P.M.G. Regulations, and (2) General Practice. The personal preferences of the OM don't enter into it. If the OM goes chasing bad signals and badly poor operating and the like, we will not be his friends. We will not be his friends to waste valuable space by writing about the things that he doesn't like, and castigating folk because they don't happen to operate in the way he likes. Then we'll turn round and chase him.

—JOHN MILLER, VKFANY.

P.S.—If anybody finds a stray sense of humour kicking about, send it to the OM c/o "A.R." If it isn't his, he could still make good use of one.

[The interpretation of the regulations by VK2XSF are quite correct in the case of the OM's criticism. However, in due fairness to the OM I believe his references throughout refer to the person who puts into a QSO to let them already in QSO know he is there and does the announcing. But when I read this case the OM's interpretation is correct—I have heard this done many times myself.—Editor.]

—

P.O. Box 127, Geraldton, W.A.

Editor "A.R.L." Sir,
Congratulations to "The Old Man" for his comments on home-made phonetic alphabets. In this rubbish was stamped out. The chaps who make up their own rules and regulations are a nuisance, especially since the majority of the "rascals" are in countries where English is not the national language. A good deal of time and thought went into the preparation of the American version which was eventually adopted by the Allied Services and which, as "The Old Man" points out, now appears in the P.M.G. Handbook.

If these "specialists" in phonetics as applied to communication work think they know better than the research workers who developed the "Able, Baker, Charlie" code, their error is only matched by their colonial ego.

R. H. ATKINSON, VK6WZ.

FIFTY Mc. AND ABOVE

(Continued from Page 17)

SNW but due to the antenna not loading the transmitter properly was unable to make a contact.

Tests which have been carried out during the month have shown it necessary to have a high gain beam for work on the band if anything other than short haul line of sight contacts are contemplated. The only new station path to be opened up was the one between 3QO in Ivanhoe and 3DA in Caulfield, a distance of about 61 miles over high intervening hills. So far only cross band QSO has been made, with 3QO on 576 and 3DA replying on 3 Mc. The path between SNW and 3XA is another that should be broken down through this appears as the distance is only about 1 mile and practically line of sight. Tests between SNW, 3XA and 3DA have so far failed to bring about any results.

Acknowledgment to VKs 3AB, 3IM, 6FC and 7DH for the above material.

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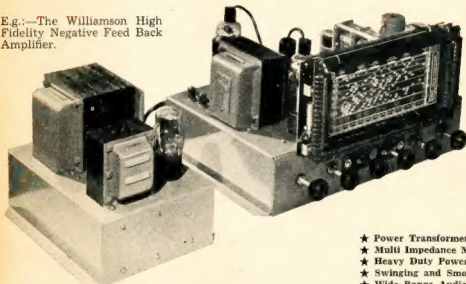
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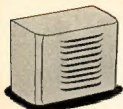


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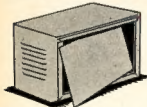
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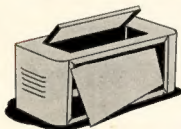
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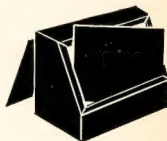
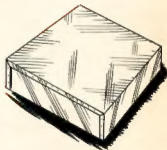
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